

REMARKS

Claims 37-52 are pending. Claims 44 and 51 are amended. Claims 1-36 are canceled.

Claim Amendments

Claims 44 and 51 are amended in to clarify the recitation of the nozzle employed in the claimed method. The amendments comply with FIG. 1 and the description thereof in the specification. No new matter has been added.

Claim Rejections - 35 U.S.C. §112

Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 44 and 45 under 35 U.S.C. §112, second paragraph based on unclear recitations of tubes in lines 6 and 9. Applicant has amended the claims to clarify that the tubes recited in lines 6 and 9 are among the tubes recited in line 3.

Claim Rejections - 35 U.S.C. §103

Rejection of claims 37, 38 and 41 based on Hawtof and Takahashi

Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 37, 38 and 41 under 35 U.S.C. §103(a) as being unpatentable over Hawtof (US 6,565,823) in view of Takahashi (US 4,388,098).

Referring to MPEP §2141, the following standards are applied in an obviousness analysis:

- (A) The claimed invention must be considered *as a whole*;
- (B) The references must be considered *as a whole* and must suggest the desirability of making the combination;
- (C) The references must be viewed *without the benefit of hindsight vision* afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard for determining obviousness. (*Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n. 5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

MPEP §2142 states that “[t]he initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest that the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). MPEP §2143.01 similarly states that “[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.” Furthermore, there must be a reasonable expectation of success when combining or modifying reference teachings. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In view of the above, the rejection of claims 37, 38 and 41 in view Hawtof and Takahashi fails to satisfy the legal requirements for establishing obviousness. It is respectfully submitted that the Examiner has failed to provide a convincing line of reasoning as to why one of skill in the art would be motivated to combine the references to arrive at the invention of claims 37, 38 and 41. Due to the lack of evidence providing motivation to combine the references, it has become apparent throughout the prosecution of the application that the Examiner is relying on impermissible hindsight vision to reconstruct applicant’s invention based on applicant’s own disclosure. Furthermore, the Examiner has improperly applied select portions of the Hawtof and Takahashi disclosures without considering the claimed invention or the references as a whole.

The Examiner has interpreted Hawtof as teaching a small portion of vapor as a first glass component and a liquid as a second glass component. The Examiner has further stated that the second glass component in Hawtof is a rare earth metal, but that there is no teaching that it is a

solution. The Examiner has asserted that Takahashi discloses nebulized solutions of metal salts as shown in Fig. 2 and the description related thereto in Hawtof.

As has been previously stated, the claimed method produces internally homogeneous multicomponent glass particles. There is no suggestion in the prior art of a desirability to combine the references in the manner done by the Examiner in order to produce internally homogeneous multicomponent glass particles, nor is there any suggestion in the prior art of any other motivation for combining the references in order to arrive at the presently claimed method. Neither Hawtof nor Takahashi intend to produce homogeneous particles, and thus the references are not relevant to the problem addressed by the claimed method.

Hawtof does disclose that clustered defects can be found in a glass body. The defects of Hawtof are due to large gel particles that can be initiation sites for the clustered defects. The defects are small (0.1 to 4.0 mm in diameter) bubbles in the glass body. This type of clustering is not related to the lack of internal homogeneity, but rather defects that external to the particles. The clustering problem is inhibited by delivering the siloxane feedstock in the liquid form to the conversion site. The claimed method addresses the problem of clusters forming due to erbium ions which start to interact. This type of clustering is related to the internal particle structure and is entirely different from the clustering problem addressed in Hawtof. Therefore, one of ordinary skill in the art would not look to combine the disclosure of Takahashi with the disclosure of Hawtof to produce internally homogeneous particles according to the claimed method.

Additionally, Hawtof introduces a silicone-containing liquid compound (siloxane) which has a high vapor pressure (i.e., low boiling point -- see col. 7, lines 42-44 of Hawtof). Due to the high boiling point of rare earth salts, the solution containing the rare earth salt will not vaporize in the same conditions as the silicone-containing liquid component. Water or alcohol, which are used in the solution, do vaporize, but the rare earth metal salt oxidizes immediately and forms clusters. Therefore, properly viewing both the presently claimed invention and Hawtof *as a whole*, similar results to those of the presently claimed process cannot be expected from the process of Hawtof. Thus, one of ordinary skill in the art would have no reasonable expectation of success in achieving the claimed invention by combining the teachings of Hawtof and Ainslie.

Furthermore, Hawtof states that “[a] small portion of the reactant can be in vapor form as delivered to the combustion site without adversely affecting the operation of the invention.” Thus, Hawtof clearly teaches that it is *undesirable* to have the vapor component. The undesirable vaporous portion forms due to the low boiling point of siloxane. Thus, Hawtof clearly teaches away from the claimed invention. If the claimed method and the Hawtof disclosure are each properly viewed as a whole, as required by the MPEP and the case law, Hawtof clearly teaches away from the claimed method.

The Examiner further stated that it might be impossible for one to determine whether two different types of particles are actually created in a flame as a precursor to the multi-component glass particles, or alternatively, “... it would seem possible that a potential competitor could substantially copy the present invention, and necessarily avoid infringement because one could not prove (at best one could only ‘assume’) whether the first and second particles were created or whether the oxides condensed equally to all particles.” Applicant respectfully submits that the Examiner’s discussion of the applicant’s ability to prove infringement or a competitor’s ability to avoid infringement is irrelevant to the issue of patentability.

For the above reasons, claims 37, 38 and 41 are allowable over Hawtof and Takahashi.

Rejection of claims 39-40 Hawtof, Takahashi and Ainslie

Claims 39 and 40 depend from claim 37. Hawtof and Takahashi fail to render the method of claim 37 obvious for the reasons provided above. Ainslie does not supply the elements and motivation missing in the Hawtof and Takahashi disclosures. Furthermore, although Ainslie teaches the advantages of rare earth metals, Ainslie does not mention anything that would lead a skilled artisan to believe that rare earth metals could be applied in a method as set forth in the present claims. Ainslie is limited to MVCD and a solution doping technique which is based on immersing a glass tube having porous glass layer on its inner surface in a rare earth solution. The Examiner has selectively applied only that portion of Ainslie which benefits his position in reconstructing the applicant’s invention, while ignoring the entire teaching of

Ainslie. Such an incomplete application of the reference is improper, and is further evidence that the Examiner is improperly employing hindsight to reject the applicant's claims.

Rejection of claims 37-45 based on Randall, Hawtof, Ainslie and Takahashi

Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 37-45 under 35 U.S.C. §103(a) as being unpatentable over Randall (US 3,883,336) in view of Hawtof (US 6,565,823), Ainslie (US 4,923,279) and Takahashi (US 4,388,098).

The Examiner has asserted that Randall discloses the claimed invention with the exception of rare earth metals. The Examiner asserted that Hawtof discloses the use of rare earth material in a similar process, that Ainslie discloses the advantages of using rare earth materials and Takahashi gives guidance as to the use of solutions for rare earth dopants.

In contrast to the claimed invention as set forth in claims 37-45, Randall does not:

- a) disclose introducing a second glass component to the vicinity of the flame through the nozzle;
- b) mention rare earth metals and a solution containing a rare earth ion, water or alcohol, and a form of aluminum which is soluble in water or alcohol (claim 42);
- c) disclose introducing an atomizing gas to the vicinity of the flame through the nozzle;
- d) disclose atomizing the second glass component in the vicinity of the flame; or
- e) disclose producing glass particles containing a rare earth metal.

Hawtof uses atomizing gas and produces glass particles comprising rare earths. However, Hawtof begins with different materials than Randall. More specifically, Hawtof uses siloxane, which behaves quite differently from silicone tetrachloride, which is used in Randall.

Additionally, the vaporous portion mentioned in Hawtof refers to the low boiling point of the siloxane raw material. That is, the undesirable small vaporous portion forms due to the low boiling point of siloxane. Hawtof clearly teaches that the vaporous portion is harmful in the process. Thus, the Examiner's interpretation that the small vaporous portion is a first glass component and a liquid is a second glass component is incorrect.

Based on the distinctions provided above, the Hawtof process is not similar to the Randall and does not provide similar results. Again, applicant submits that the references must be considered in their entirety. The Examiner cannot merely pick and chose specific elements from each reference without regard for the complete teachings of the references. Because siloxane behaves differently than silicone tetrachloride, one of ordinary skill in the art would not seek to combine the Hawtof and Randall processes to arrive at the claimed process.

With respect to claim 44, Hawtof also fails to disclose delivering the first and second glass components (as interpreted by the Examiner) through separate tubes. Therefore, combining the disclosures of Hawtof and Randall does not result in a teaching of delivering first and second glass components through separate tubes, as presently claimed.

Ainslie teaches the advantages of using rare earth metals. However, Ainslie does not mention anything that would lead a skilled artisan to believe that rare earth metals could be applied in a method as set forth in the present claims. Ainslie is limited to MVCD and a solution doping technique which is based on immersing a glass tube having porous glass layer on its inner surface in a rare earth solution. Again, the Examiner has selectively applied only that portion of Ainslie which benefits his reconstruction of the applicant's invention, while failing to consider the teaching of Ainslie as a whole. As stated above, this incomplete application of the reference is improper, and serves as evidence that the Examiner is improperly employing hindsight to reject the applicant's claims.

Takahashi discloses a dopant in the form of an aqueous solution of a metallic salt. This aqueous solution is nebulized in a separate nebulizer, not in the vicinity of the flame, as required by the present claims. Furthermore, the aqueous solution is not delivered through the same

nozzle, as required by the present claims. Still further, there is no motivation in the references to combine the disclosure of Takahashi with the disclosures of Randall, Hawtof and Ainslie to arrive at the claimed process

Based on the above, it is clear that the references as combined by the Examiner do not result in the claimed invention, nor is there motivation in the references to combine their teachings as the Examiner has done. Applicant respectfully submits that it is simply not possible to arrive at the Examiner's conclusion of obviousness without engaging in improper hindsight.

Rejection of claims 46-52 based on of Randall, Hawtof, Ainslie, Takahashi and Finnish Patent 98832

Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 46-52 under 35 U.S.C. §103(a) as being unpatentable over Randall (US 3,883,336) in view of Hawtof (US 6,565,823), Ainslie (US 4,923,279), Takahashi (US 4,388,098) and Finnish patent 98832 (FI '832).

The Examiner stated that claims 46-52 are substantially the same as claims 37-45, except that claims 46-52 require that a fuel gas be used to cause atomizing. The Examiner asserted that FI '832 discloses the use of fuel gas as an atomizing gas. Despite the teachings of FI '832 with respect to using fuel gas as an atomizing gas, the same deficiencies cited with regard to the Examiner's combination of Randall, Hawtof, Ainslie and Takahashi in the rejection of claims 37-45 exist in the application of these references to claims 46-52. The disclosure FI '832 does not disclose anything to overcome the deficiencies in Randall, Hawtof, Ainslie and Takahashi as applied to the claimed invention. Therefore, claims 46-52 are allowable.

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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If a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 20386-00294-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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